EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA); Scientific Opinion on the substantiation of health claims related to fats and “function of the cell membrane” (ID 622, 2900, 2911) and normal absorption of fat-soluble vitamins (ID 670, 2902) pursuant to Article 13(1) of Regulation (EC) No 1924/2006

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SCIENTIFIC OPINION

Scientific Opinion on the substantiation of health claims related to fats and "function of the cell membrane" (ID 622, 2900, 2911) and normal absorption of fat-soluble vitamins (ID 670, 2902) pursuant to Article 13(1) of Regulation (EC) No 1924/2006[1]

EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)[2, 3]

European Food Safety Authority (EFSA), Parma, Italy

SUMMARY

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies was asked to provide a scientific opinion on a list of health claims pursuant to Article 13 of Regulation (EC) No 1924/2006. This opinion addresses the scientific substantiation of health claims in relation to fats and "function of the cell membrane" and normal absorption of fat-soluble vitamins. The scientific substantiation is based on the information provided by the Member States in the consolidated list of Article 13 health claims and references that EFSA has received from Member States or directly from stakeholders.

The food constituent that is the subject of the health claims is fats. The Panel considers that fats are sufficiently characterised in relation to the claimed effects.

"Function of the cell membrane"

The claimed effects are "function of the cell membrane" and "cell growth/cell functioning and structure". The target population is assumed to be the general population. The claimed effect is not sufficiently defined, and from the references provided it was not possible to establish the specific effect which is the target for the claim.

The Panel considers that the claimed effect is general and non-specific, and does not refer to any specific health claim as required by Regulation (EC) No 1924/2006.

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[1] On request from the European Commission, Question No EFSA-Q-2008-1409, EFSA-Q-2008-1457, No EFSA-Q-2008-3633, EFSA-Q-2008-3635, EFSA-Q-2008-3644, adopted on 08 April 2011.

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[3] Acknowledgement: The Panel wishes to thank the members of the Working Group on Claims for the preparatory work on this scientific opinion: Carlo Agostoni, Jean-Louis Bresson, Susan Fairweather-Tait, Albert Flynn, Ines Golly, Marina Heinonen, Hannu Korhonen, Martinus Løvik, Ambroise Martin, Hildegard Przyrembel, Seppo Salminen, Yolanda Sanz, Sean (J.J.) Strain, Inge Tetens, Hendrik van Loveren and Hans Verhagen.

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Normal absorption of fat-soluble vitamins

The claimed effect is "absorption of fat-soluble vitamins". The target population is assumed to be the general population. The Panel considers that normal absorption of fat-soluble vitamins is a beneficial physiological effect.

Triacylglycerols and fatty acids facilitate the absorption of fat-soluble components (e.g. vitamins A, D, E and K, and carotenoids) by the formation of micelles in the small intestine.

The Panel concludes that a cause and effect relationship has been established between the dietary intake of fats and the normal absorption of fat-soluble vitamins. However, the evidence provided does not establish that inadequate intake of fats leading to impaired absorption of fat-soluble vitamins occurs in the general EU population.

The Panel considers that no conditions of use can be defined.

KEY WORDS

Fats, fat-soluble vitamins, absorption, health claims.

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INFORMATION AS PROVIDED IN THE CONSOLIDATED LIST

The consolidated list of health claims pursuant to Article 13 of Regulation (EC) No 1924/2006[4] submitted by Member States contains main entry claims with corresponding conditions of use and literature for similar health claims. EFSA has screened all health claims contained in the original consolidated list of Article 13 health claims which was received by EFSA in 2008 using six criteria established by the NDA Panel to identify claims for which EFSA considered sufficient information had been provided for evaluation and those for which more information or clarification was needed before evaluation could be carried out[5]. The clarifications which were received by EFSA through the screening process have been included in the consolidated list. This additional information will serve as clarification to the originally provided information. The information provided in the consolidated list for the health claims which are the subject of this opinion is tabulated in Appendix C.

ASSESSMENT

1. Characterisation of the food/constituent

The food constituent that is the subject of the health claims is fats.

Dietary fats are well recognised nutrients and are measurable in foods by established methods.

Fats (triacylglycerols) are esters of fatty acids and glycerol. Three fatty acids are esterified to a glycerol backbone, representing more than 90 % by weight of triacylglycerols. Dietary fatty acids are liberated by hydrolysis of triacylglycerols and consist of an even number of carbon atoms usually ranging between 4 and 22. Unsaturated fatty acids comprise mono- (MUFAs) and polyunsaturated fatty acids (PUFAs), which have one (MUFAs) or more double bonds (PUFAs). Most unsaturated fatty acids in the diet have the *cis* configuration, but *trans* fatty acids are also present. Both *trans*-MUFAs and *trans*-PUFAs exist. *Trans*-PUFAs have at least one *trans* double bond and may, in addition, also have double bonds with the *cis* configuration.

The Panel considers that the food constituent, fats, which is the subject of the health claims, is sufficiently characterised in relation to the claimed effects.

2. Relevance of the claimed effect to human health

2.1. "Function of the cell membrane" (ID 622, 2900, 2911)

The claimed effects are "function of the cell membrane" and "cell growth/cell functioning and structure". The Panel assumes that the target population is the general population.

Cell membranes may have different functions depending on their composition and the cell type they belong to. The claimed effect is not sufficiently defined, and from the references provided it was not possible to establish the specific effect which is the target for the claim.

The Panel considers that the claimed effect is general and non-specific, and does not refer to any specific health claim as required by Regulation (EC) No 1924/2006.

[4] Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods. OJ L 404, 30.12.2006, p. 9–25.

[5] EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA), 2011. General guidance for stakeholders on the evaluation of Article 13.1, 13.5 and 14 health claims. EFSA Journal, 9(4):2135, 24 pp.

2.2. Normal absorption of fat-soluble vitamins (ID 670, 2902)

The claimed effect is "absorption of fat-soluble vitamins". The Panel assumes that the target population is the general population.

The Panel considers that normal absorption of fat-soluble vitamins is a beneficial physiological effect.

3. Scientific substantiation of the claimed effect

3.1. Normal absorption of fat-soluble vitamins (ID 670, 2902)

Triacylglycerols and fatty acids facilitate the absorption of fat-soluble components (e.g. vitamins A, D, E and K, and carotenoids) by the formation of micelles in the small intestine. The bioavailability of fat-soluble vitamins depends on a variety of factors, such as type and physicochemical properties of the fat-soluble vitamin, amount ingested, food matrix, interaction with other food components, age, and nutritional status (Yeum and Russell, 2002). Dose-response data regarding the amount of dietary fat needed to achieve an optimal absorption of fat-soluble vitamins are limited, but such amount is considered to be quite low (IoM, 2005).

In Europe, very low fat intakes are highly unlikely, with 95 % of adults ingesting more than 22-25 % (5^{th} percentile) of their total energy intake as fat. This amount corresponds to a daily fat intake of ≥ 40 g (EFSA Panel on Dietetic Products Nutrition and Allergies (NDA), 2010). The Panel considers that at intakes generally observed in European countries, fat is not a limiting factor for the normal absorption of fat-soluble vitamins.

The Panel concludes that a cause and effect relationship has been established between the dietary intake of fats and the normal absorption of fat-soluble vitamins. However, the evidence provided does not establish that inadequate intake of fats leading to impaired absorption of fat-soluble vitamins occurs in the general EU population.

4. Panel's comments on the proposed wording

4.1. Normal absorption of fat-soluble vitamins (ID 670, 2902)

The Panel considers that the following wording reflects the scientific evidence: "Fat contributes to the normal absorption of fat-soluble vitamins."

5. Conditions and possible restrictions of use

5.1. Normal absorption of fat-soluble vitamins (ID 670, 2902)

The Panel considers that no conditions of use can be defined.

CONCLUSIONS

On the basis of the data presented, the Panel concludes that:

- The food constituent, fats, which is the subject of the health claims, is sufficiently characterised in relation to the claimed effects.

"Function of the cell membrane" (ID 622, 2900, 2911)

- The claimed effects are "function of the cell membrane" and "cell growth/cell functioning and structure". The target population is assumed to be the general population.
- The claimed effects are general and non-specific, and do not refer to any specific health claim as required by Regulation (EC) No 1924/2006.

Normal absorption of fat-soluble vitamins (ID 670, 2902)

- The claimed effect is "absorption of fat-soluble vitamins". The target population is assumed to be the general population. Normal absorption of fat-soluble vitamins is a beneficial physiological effect.
- A cause and effect relationship has been established between the dietary intake of fats and the normal absorption of fat-soluble vitamins.
- The evidence provided does not establish that inadequate intake of fats leading to impaired absorption of fat-soluble vitamins occurs in the general EU population.
- The following wording reflects the scientific evidence: "Fat contributes to the normal absorption of fat-soluble vitamins."
- No conditions of use can be defined.

DOCUMENTATION PROVIDED TO EFSA

Health claims pursuant to Article 13 of Regulation (EC) No 1924/2006 (No: EFSA-Q-2008-1409, EFSA-Q-2008-1457, EFSA-Q-2008-3633, EFSA-Q-2008-3635, EFSA-Q-2008-3644). The scientific substantiation is based on the information provided by the Member States in the consolidated list of Article 13 health claims and references that EFSA has received from Member States or directly from stakeholders.

The full list of supporting references as provided to EFSA is available on: http://www.efsa.europa.eu/panels/nda/claims/article13.htm.

REFERENCES

EFSA Panel on Dietetic Products Nutrition and Allergies (NDA), 2010. Scientific Opinion on Dietary Reference Values for fats, including saturated fatty acids, polyunsaturated fatty acids, monounsaturated fatty acids, trans fatty acids, and cholesterol. EFSA Journal, 8(3):1461, 107 pp.

IoM (Institute of Medicine), 2005. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids. National Academies Press, Washington DC.

Yeum KJ and Russell RM, 2002. Carotenoid bioavailability and bioconversion. Annual Review of Nutrition, 22, 483-504.

APPENDICES

APPENDIX A

BACKGROUND AND TERMS OF REFERENCE AS PROVIDED BY THE EUROPEAN COMMISSION

The Regulation 1924/2006 on nutrition and health claims made on foods[6] (hereinafter "the Regulation") entered into force on 19th January 2007.

Article 13 of the Regulation foresees that the Commission shall adopt a Community list of permitted health claims other than those referring to the reduction of disease risk and to children's development and health. This Community list shall be adopted through the Regulatory Committee procedure and following consultation of the European Food Safety Authority (EFSA).

Health claims are defined as "any claim that states, suggests or implies that a relationship exists between a food category, a food or one of its constituents and health".

In accordance with Article 13 (1) health claims other than those referring to the reduction of disease risk and to children's development and health are health claims describing or referring to:

a) the role of a nutrient or other substance in growth, development and the functions of the body; or

b) psychological and behavioural functions; or

c) without prejudice to Directive 96/8/EC, slimming or weight-control or a reduction in the sense of hunger or an increase in the sense of satiety or to the reduction of the available energy from the diet.

To be included in the Community list of permitted health claims, the claims shall be:

(i) based on generally accepted scientific evidence; and

(ii) well understood by the average consumer.

Member States provided the Commission with lists of claims as referred to in Article 13 (1) by 31 January 2008 accompanied by the conditions applying to them and by references to the relevant scientific justification. These lists have been consolidated into the list which forms the basis for the EFSA consultation in accordance with Article 13 (3).

ISSUES THAT NEED TO BE CONSIDERED

IMPORTANCE AND PERTINENCE OF THE FOOD[7]

Foods are commonly involved in many different functions[8] of the body, and for one single food many health claims may therefore be scientifically true. Therefore, the relative importance of food e.g. nutrients in relation to other nutrients for the expressed beneficial effect should be considered: for functions affected by a large number of dietary factors it should be considered whether a reference to a single food is scientifically pertinent.

[6] OJ L12, 18/01/2007
[7] The term 'food' when used in this Terms of Reference refers to a food constituent, the food or the food category.
[8] The term 'function' when used in this Terms of Reference refers to health claims in Article 13(1)(a), (b) and (c).

It should also be considered if the information on the characteristics of the food contains aspects pertinent to the beneficial effect.

SUBSTANTIATION OF CLAIMS BY GENERALLY ACCEPTABLE SCIENTIFIC EVIDENCE

Scientific substantiation is the main aspect to be taken into account to authorise health claims. Claims should be scientifically substantiated by taking into account the totality of the available scientific data, and by weighing the evidence, and shall demonstrate the extent to which:

(a) the claimed effect of the food is beneficial for human health,

(b) a cause and effect relationship is established between consumption of the food and the claimed effect in humans (such as: the strength, consistency, specificity, dose-response, and biological plausibility of the relationship),

(c) the quantity of the food and pattern of consumption required to obtain the claimed effect could reasonably be achieved as part of a balanced diet,

(d) the specific study group(s) in which the evidence was obtained is representative of the target population for which the claim is intended.

EFSA has mentioned in its scientific and technical guidance for the preparation and presentation of the application for authorisation of health claims consistent criteria for the potential sources of scientific data. Such sources may not be available for all health claims. Nevertheless it will be relevant and important that EFSA comments on the availability and quality of such data in order to allow the regulator to judge and make a risk management decision about the acceptability of health claims included in the submitted list.

The scientific evidence about the role of a food on a nutritional or physiological function is not enough to justify the claim. The beneficial effect of the dietary intake has also to be demonstrated. Moreover, the beneficial effect should be significant i.e. satisfactorily demonstrate to beneficially affect identified functions in the body in a way which is relevant to health. Although an appreciation of the beneficial effect in relation to the nutritional status of the European population may be of interest, the presence or absence of the actual need for a nutrient or other substance with nutritional or physiological effect for that population should not, however, condition such considerations.

Different types of effects can be claimed. Claims referring to the maintenance of a function may be distinct from claims referring to the improvement of a function. EFSA may wish to comment whether such different claims comply with the criteria laid down in the Regulation.

WORDING OF HEALTH CLAIMS

Scientific substantiation of health claims is the main aspect on which EFSA's opinion is requested. However, the wording of health claims should also be commented by EFSA in its opinion.

There is potentially a plethora of expressions that may be used to convey the relationship between the food and the function. This may be due to commercial practices, consumer perception and linguistic or cultural differences across the EU. Nevertheless, the wording used to make health claims should be truthful, clear, reliable and useful to the consumer in choosing a healthy diet.

In addition to fulfilling the general principles and conditions of the Regulation laid down in Article 3 and 5, Article 13(1)(a) stipulates that health claims shall describe or refer to "the role of a nutrient or other substance in growth, development and the functions of the body". Therefore, the requirement to

describe or refer to the 'role' of a nutrient or substance in growth, development and the functions of the body should be carefully considered.

The specificity of the wording is very important. Health claims such as "Substance X supports the function of the joints" may not sufficiently do so, whereas a claim such as "Substance X helps maintain the flexibility of the joints" would. In the first example of a claim it is unclear which of the various functions of the joints is described or referred to contrary to the latter example which specifies this by using the word "flexibility".

The clarity of the wording is very important. The guiding principle should be that the description or reference to the role of the nutrient or other substance shall be clear and unambiguous and therefore be specified to the extent possible i.e. descriptive words/ terms which can have multiple meanings should be avoided. To this end, wordings like "strengthens your natural defences" or "contain antioxidants" should be considered as well as "may" or "might" as opposed to words like "contributes", "aids" or "helps".

In addition, for functions affected by a large number of dietary factors it should be considered whether wordings such as "indispensable", "necessary", "essential" and "important" reflects the strength of the scientific evidence.

Similar alternative wordings as mentioned above are used for claims relating to different relationships between the various foods and health. It is not the intention of the regulator to adopt a detailed and rigid list of claims where all possible wordings for the different claims are approved. Therefore, it is not required that EFSA comments on each individual wording for each claim unless the wording is strictly pertinent to a specific claim. It would be appreciated though that EFSA may consider and comment generally on such elements relating to wording to ensure the compliance with the criteria laid down in the Regulation.

In doing so the explanation provided for in recital 16 of the Regulation on the notion of the average consumer should be recalled. In addition, such assessment should take into account the particular perspective and/or knowledge in the target group of the claim, if such is indicated or implied.

TERMS OF REFERENCE

HEALTH CLAIMS OTHER THAN THOSE REFERRING TO THE REDUCTION OF DISEASE RISK AND TO CHILDREN'S DEVELOPMENT AND HEALTH

EFSA should in particular consider, and provide advice on the following aspects:

- Whether adequate information is provided on the characteristics of the food pertinent to the beneficial effect.
- Whether the beneficial effect of the food on the function is substantiated by generally accepted scientific evidence by taking into account the totality of the available scientific data, and by weighing the evidence. In this context EFSA is invited to comment on the nature and quality of the totality of the evidence provided according to consistent criteria.
- The specific importance of the food for the claimed effect. For functions affected by a large number of dietary factors whether a reference to a single food is scientifically pertinent.

In addition, EFSA should consider the claimed effect on the function, and provide advice on the extent to which:

- the claimed effect of the food in the identified function is beneficial.
- a cause and effect relationship has been established between consumption of the food and the claimed effect in humans and whether the magnitude of the effect is related to the quantity consumed.

- where appropriate, the effect on the function is significant in relation to the quantity of the food proposed to be consumed and if this quantity could reasonably be consumed as part of a balanced diet.
- the specific study group(s) in which the evidence was obtained is representative of the target population for which the claim is intended.
- the wordings used to express the claimed effect reflect the scientific evidence and complies with the criteria laid down in the Regulation.

When considering these elements EFSA should also provide advice, when appropriate:

- on the appropriate application of Article 10 (2) (c) and (d) in the Regulation, which provides for additional labelling requirements addressed to persons who should avoid using the food; and/or warnings for products that are likely to present a health risk if consumed to excess.

APPENDIX B

EFSA DISCLAIMER

The present opinion does not constitute, and cannot be construed as, an authorisation to the marketing of the food/food constituent, a positive assessment of its safety, nor a decision on whether the food/food constituent is, or is not, classified as foodstuffs. It should be noted that such an assessment is not foreseen in the framework of Regulation (EC) No 1924/2006.

It should also be highlighted that the scope, the proposed wordings of the claims and the conditions of use as proposed in the Consolidated List may be subject to changes, pending the outcome of the authorisation procedure foreseen in Article 13(3) of Regulation (EC) No 1924/2006.

APPENDIX C

Table 1. Main entry health claims related to fats, including conditions of use from similar claims, as proposed in the Consolidated List.

ID	Food or Food constituent	Health Relationship	Proposed wording
622	Unsaturated fats/fatty acids	Function of the cell membrane	-help to maintain the function and fluidity of the cellular menbranes.
	Conditions of use - Amount of consumption: >23 Gramm (g). Other condition: Tägliche Aufnahme von der empfohlenen Tageszufuhr. - min 10% fat (product basis), max 33% SAFA (fat basis) and based on 20g GDA for SAFA, max 2% TFA (fat basis)		
ID	**Food or Food constituent**	**Health Relationship**	**Proposed wording**
670	Fats	Absorption of fat-soluble vitamins	Fats are necessary for the absorption of fat-soluble vitamins.
	Conditions of use - 15-30 energy % (around 33-66 g/day)		
ID	**Food or Food constituent**	**Health Relationship**	**Proposed wording**
2900	Fats	Cell growth/cell functioning and structure <u>Clarification provided</u> Physiological role: Fatty acids are also fundamental building blocks for the synthesis of most biologically important lipids, including phospholipids, sphingolipids, and cholesterol esters. They are the precursors of bioactive molecules. In addition, fatty acids and their coenzyme A derivatives have many metabolic regulatory roles. (Phospholipids have multiple roles, including the following: 1. They provide a structural framework to maintain cellular integrity and to compartmentalize diverse events within the cell. 2. They provide the appropriate physicochemical environment to optimize the activities of membrane-associated receptors, enzymes, and proteins.	fats are essential to the body.

		3. They act as substrate molecules for a variety of phospholipase enzymes involved in signaling mechanisms. 4. They provide sites for binding of proteins involved in cellular signaling processes. 5. They exert a physicochemical detergent-like action to facilitate the physiological function of a variety of tissues, including the lungs, stomach, and synovial surfaces. 6. They regulate the synthesis and secretion of lipoproteins from the liver.)	
	Conditions of use - min 10% fat (product basis) and at least 15% of GDA for PUFA of 16g		
ID	**Food or Food constituent**	**Health Relationship**	**Proposed wording**
2902	Fats (fatty acids higher than C-10)	Absorption of fat soluble vitamins	fats are needed to absorb fat soluble-vitamins
	Conditions of use - min 10% fat (product basis) and based on 15% of 70 g GDA for fat		
ID	**Food or Food constituent**	**Health Relationship**	**Proposed wording**
2911	Unsaturated fats/fatty acids	Function of the cell membrane	help to maintain the function and fluidity of the cellular membranes.
	Conditions of use - min 10% fat (product basis), max 33% SAFA (fat basis) and based on 20g GDA for SAFA, max 2% TFA (fat basis)		

GLOSSARY AND ABBREVIATIONS

MUFA	Monounsaturated fatty acid
PUFA	Polyunsaturated fatty acid